ORDER NO. RD81041854C1

Service Manual

Radio

RF-10/©

FM/AM/FM STEREO RADIO with FEATHERWEIGHT STEREO HEADPHONES

■ SPECIFICATIONS

•Main Unit

Frequency Range:	FM 88~108 MHz AM 525~1610 kHz
Intermediate Frequency:	FM 10.7 MHz AM 455 kHz
Sensitivity:	FM 2.6 μV for 50 mW Output AM 100 μV/m for 50 mW Output
Power Output:	80 mW (40 mW×2) Maximum
Batteries:	4.5 V (Three "AAA" Size Penlight Batteries) (Panasonic UM-4 or equivalent)
Dimensions:	72 (Wide)×127 (High)×16.7 (Deep) mm (2 $\frac{7}{8}$ "×5"×$\frac{11}{16}$ ")
Weight:	85 g (3 oz.) without batteries
Impedance:	Headphone Jack 32Ω

•Featherweight Stereo Headphones

Input:	1 mW (Max. 40 mW)
Impedance:	32Ω
Connection Cord:	1.5 m (59$\frac{1}{16}$")
Weight:	55 g (2 oz.) with cord

Specifications are subject to change without notice.
Weights and dimensions shown are approximate.
(Les poids et dimensions mentionnes sont approximatifs.)

Panasonic®

Panasonic Company
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Carolina, Puerto Rico 00630

LOCATION OF CONTROLS AND COMPONENTS

Fig. 1

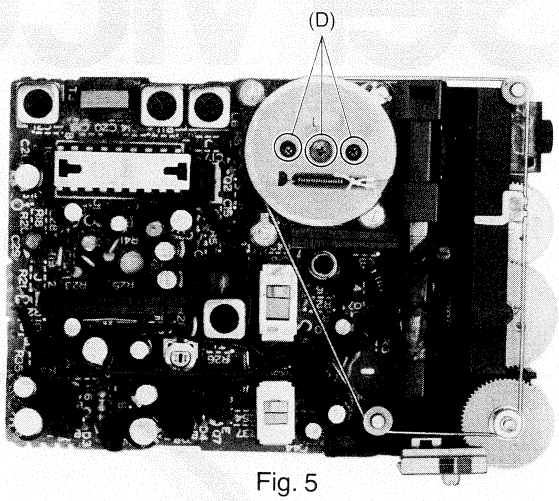


Fig. 5

DISASSEMBLY INSTRUCTIONS

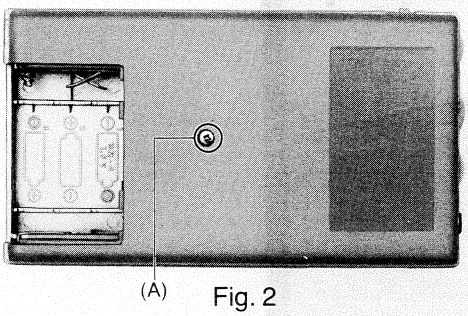


Fig. 2

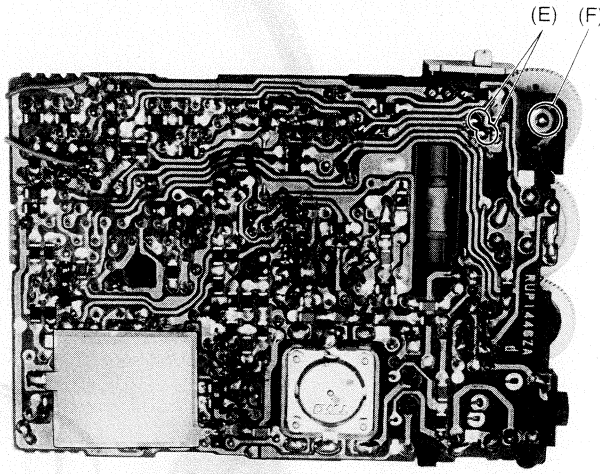


Fig. 6

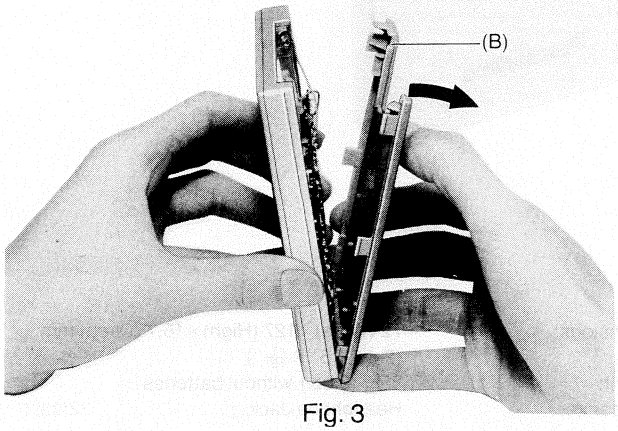


Fig. 3

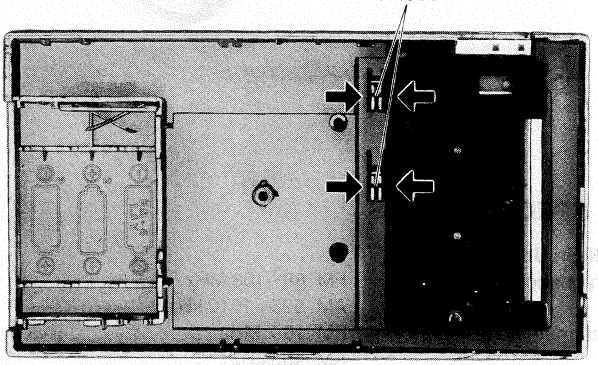


Fig. 7

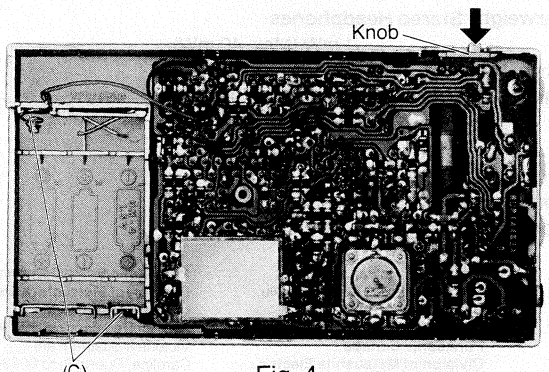


Fig. 4

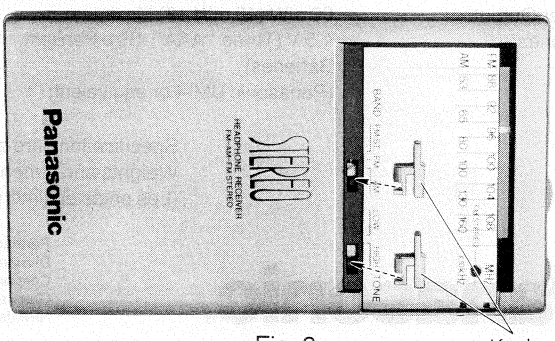


Fig. 8

Procedure	To remove—.	Remove—.	Shown in Fig.—.
1	Circuit Board *A	Screw (3×10) ..... (A)×1	2
2		Cabinet Cover ..... (B)×1	3
3		Battery Terminals ..... (C)×2	4
4	Dial Chassis *B	Screws (17×2) ..... (D)×3	5
5		Unsolder ..... (E)×2	6
6		Nut (2∅) ..... (F)×1	6

Notes:

*A. 1. Set band switch to FM·ST and tone switch to low position.
2. Remove the knobs by pushing the catch in the direction of arrows as shown in fig. 7.
3. Push the knob in the direction of arrow as shown in fig. 4.
4. Insert the knobs in cabinet as shown in fig. 8.

*B. 1. Solder the LED after insert the circuit board in cabinet.

DIAL THREADING

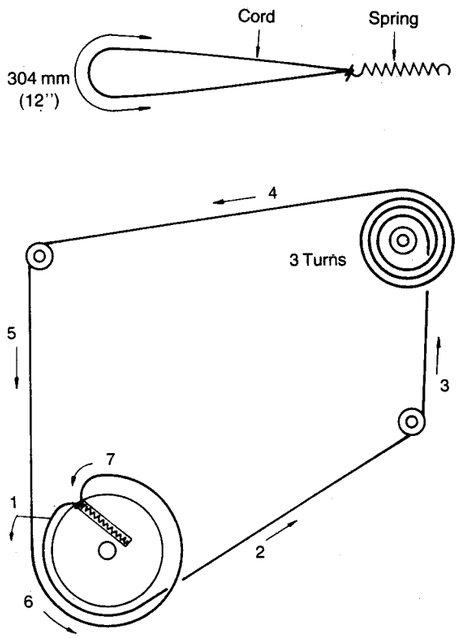


Fig. 9

ALIGNMENT POINTS

*Please refer to circuit board wiring view in which test point are located.

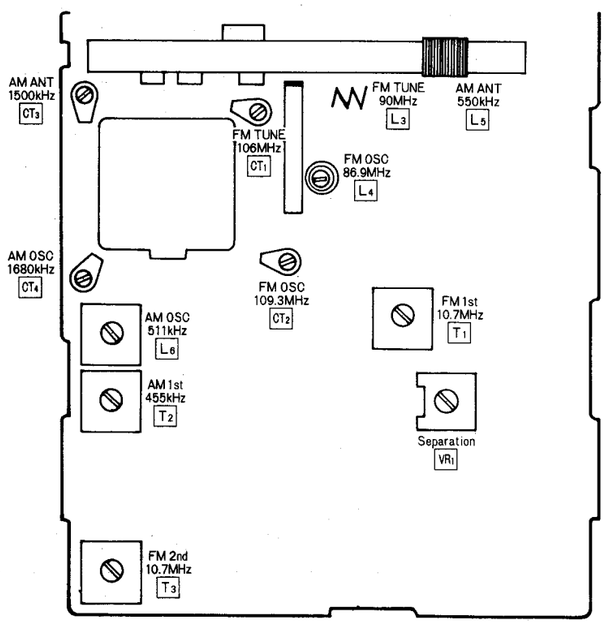


Fig. 10

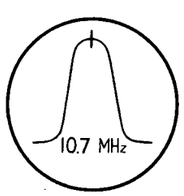


Fig. 11

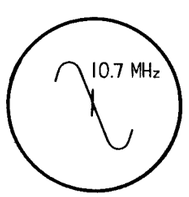


Fig. 12

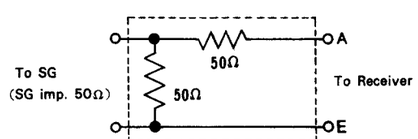


Fig. 13 FM Dummy Antenna

ALIGNMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

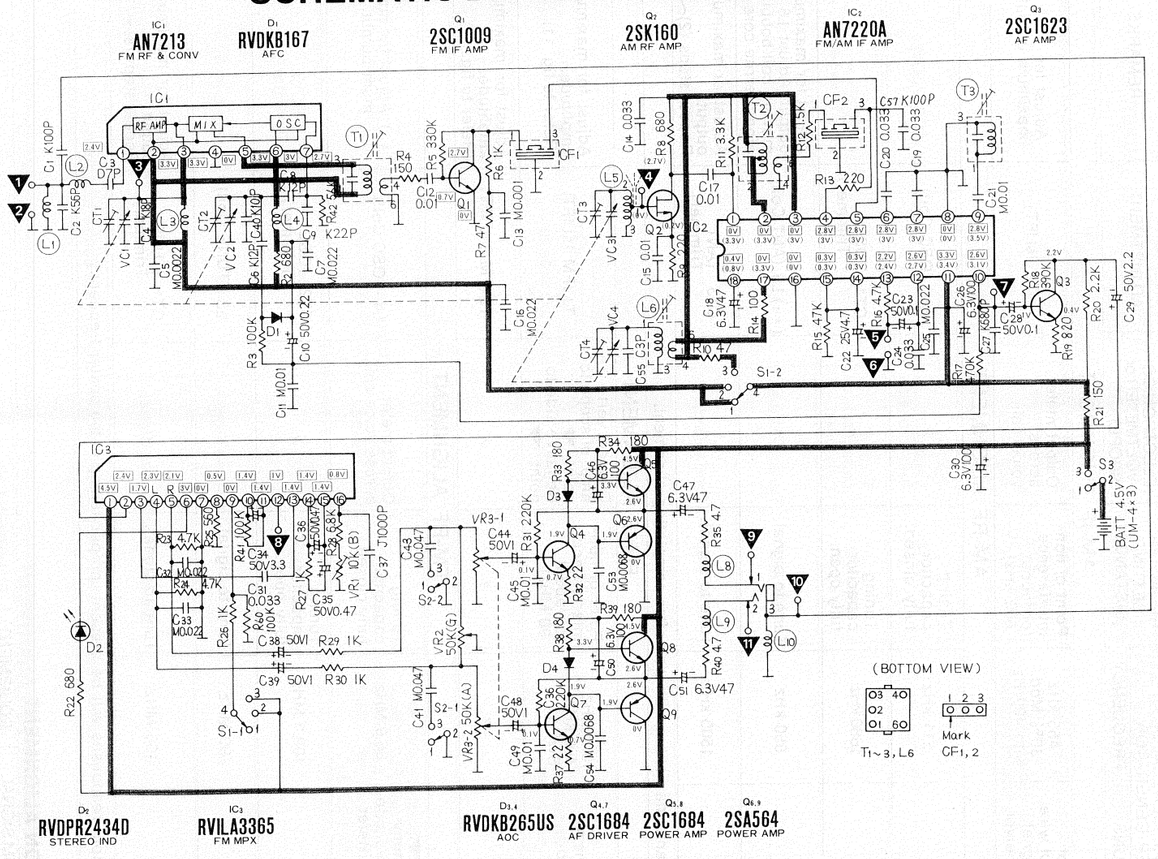
Notes:
1. Set volume control to maximum.
2. Set band selector switch to AM or FM.
3. Set power switch to ON.
4. Set power source voltage to 4.5 volts DC.
5. Output of signal generator should be no higher than necessary to obtain an output reading.

	SIGNAL GENERATOR or SWEEP GENERATOR CONNECTIONS	SIGNAL GENERATOR or SWEEP GENERATOR FREQUENCY	RADIO DIAL SETTING (DISTANCE)	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	AM-IF ALIGNMENT					
(1)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz.	Point of non-interference. (on/about 600 kHz)	Output meter across voice coil.	T2 (1st IFT)	Adjust for maximum output.
	AM-RF ALIGNMENT					
(2)	〃	511 kHz	Tuning capacitor fully closed.	〃	L6 (OSC Coil)	〃
(3)	〃	1680 kHz	Tuning capacitor fully open.	〃	CT4 (OSC Trimmer)	〃
(4)	〃	550 kHz	Tune to signal.	〃	(*1) L5 (ANT Coil)	Adjust for maximum output. Adjust L5 by moving coil bobbin along ferrite core.
(5)	〃	1500 kHz	Tune to signal.	〃	CT3 (ANT Trimmer)	Adjust for maximum output. Repeat steps (2)～(5).
	(*1) Cement antenna bobbin with wax after completing alignment.					
	FM-IF ALIGNMENT					
(6)	High side thru. 0.001μF to point ▼ Negative side to point ▼ .	10.7 MHz (400 kHz SWP.)	Point of non-interference. (on/about 90 MHz).	Connect vert. amp. of scope to point ▼ , Negative side to point ▼ .	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 11).
(7)	〃	〃	〃	〃	T3 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 12).
	FM-RF ALIGNMENT					
(8)	Connect point ▼ through FM dummy antenna Negative side to point ▼ . (Refer to fig. 13.)	86.9 MHz	Tuning capacitor fully closed.	Output meter across voice coil.	L4 (OSC Coil)	(*2) Adjust for maximum output.
(9)	〃	109.3 MHz	Tuning capacitor fully open.	〃	CT2 (OSC Trimmer)	〃
(10)	〃	90 MHz	Tune to signal.	〃	L3 (TUNE Coil)	〃
(11)	〃	106 MHz	Tune to signal.	〃	CT1 (TUNE Trimmer)	Adjust for maximum output. Repeat steps (8)～(11).
	(*2) Three output responses will be present; proper tuning is the center frequency.					

■ SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	90 MHz, 60 dB	▼...(+) side ▼...(−) side	VR_1	19 kHz	Adjust VR_1 for 19 kHz (±100 Hz) reading on electronics counter.

SCHEMATIC DIAGRAM MODEL RF-10/©



Notes:

1. S1-1, S1-2: Band switch in "FM·ST" position.
   (① . . . FM·ST, ② . . . FM, ③ . . . AM)
2. S2: Tone switch in "HIGH" position.
3. S3: Power switch in "OFF" position.
4. DC voltage measurements are taken with electronics voltmeter based on negative terminal of battery.
   ☐ . . . FM position, ( ) . . . AM position.
5. Battery Current: No signal . . . . . 34 mA
   Maximum output . . . . . 41 mA
6. VR1 . . . . . VCO Adjustment
   VR2 . . . . . Balance Control
   VR3 . . . . . Volume Control

CIRCUIT BOARD WIRING VIEW MODEL RF-10/©

Q6	
C	0V
B	1.9V
E	2.6V

Q5	
C	4.5V
B	3.3V
E	2.6V

Q4	
C	1.9V
B	0.1V
E	0.7V

Q9	
C	0V
B	1.9V
E	2.6V

Q8	
C	4.5V
B	3.3V
E	2.6V

Q7	
C	1.9V
B	0.1V
E	0.7V

IC3

	FM		FM
1	4.5V	9	0V
2	2.4V	10	1.4V
3	1.7V	11	1.4V
4	2.3V	12	1V
5	2.1V	13	1.4V
6	3V	14	1.4V
7	0V	15	1.4V
8	0.5V	16	0.8V

Q3

C	2.2V
B	1V
E	0.4V

IC2

	AM	FM		AM	FM
1	3.3V	0V	10	3.1V	2.6V
2	3.3V	0V	11	3.4V	3.3V
3	3V	0V	12	2.7V	2.6V
4	3V	2.8V	13	2.4V	2.2V
5	3V	2.8V	14	0.3V	0.3V
6	3V	2.8V	15	0.3V	0.3V
7	3V	2.8V	16	0V	0V
8	0V	0V	17	3.3V	0V
9	3.5V	2.8V	18	0.8V	0.4V

Q1

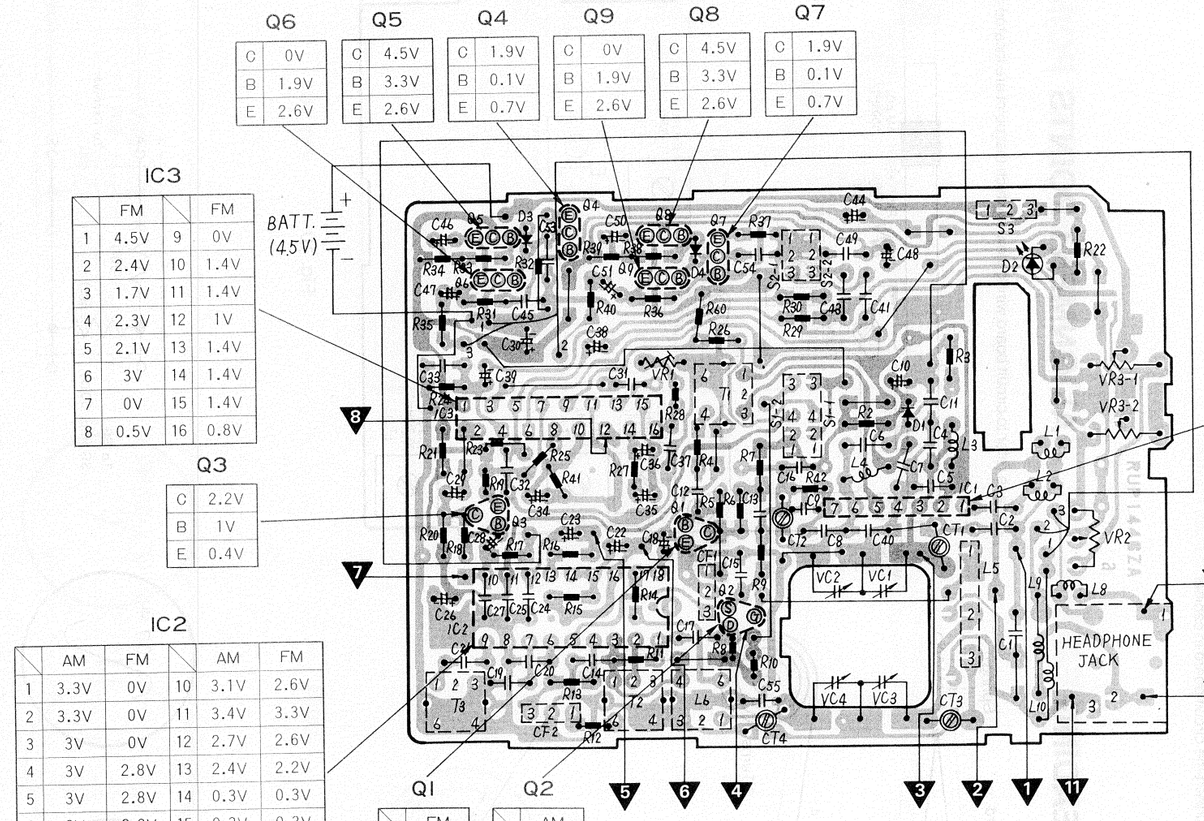
	FM
C	2.7V
B	0.7V
E	0V

Q2

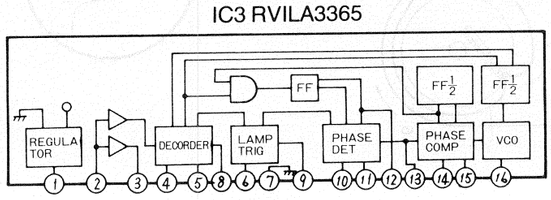
	AM
D	2.7V
G	0V
S	0.2V

IC1

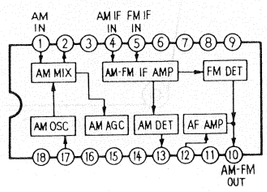
	FM
1	2.4V
2	3.3V
3	3.3V
4	0V
5	3.3V
6	3V
7	2.7V



IC3 RVILA3365



IC2 AN7220A



PARTS LOCATIONS

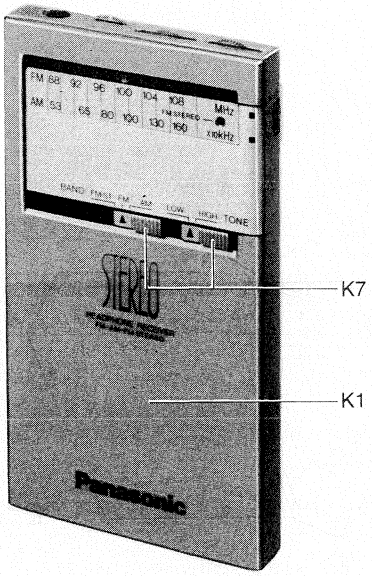


Fig. 14

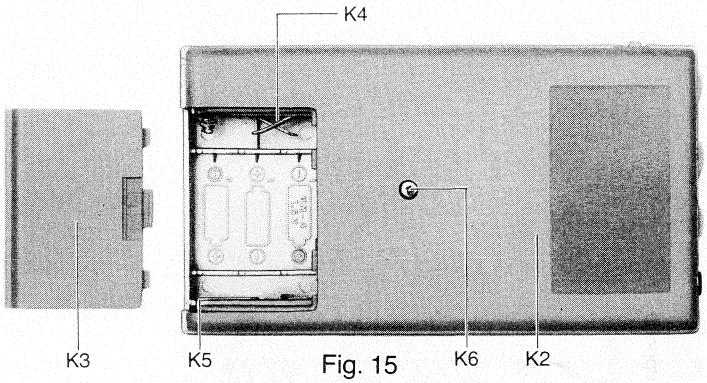


Fig. 15

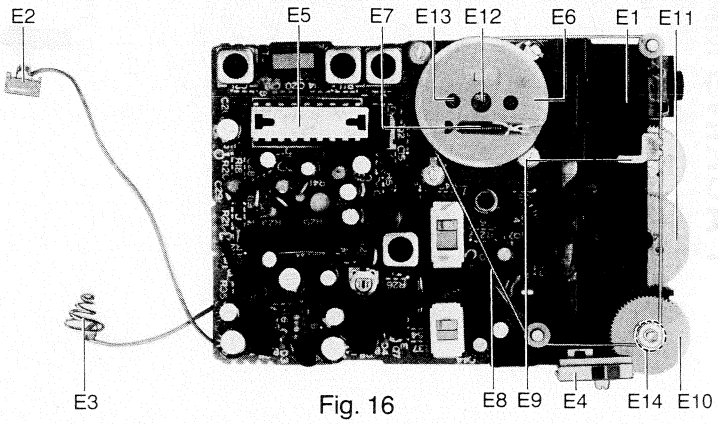


Fig. 16

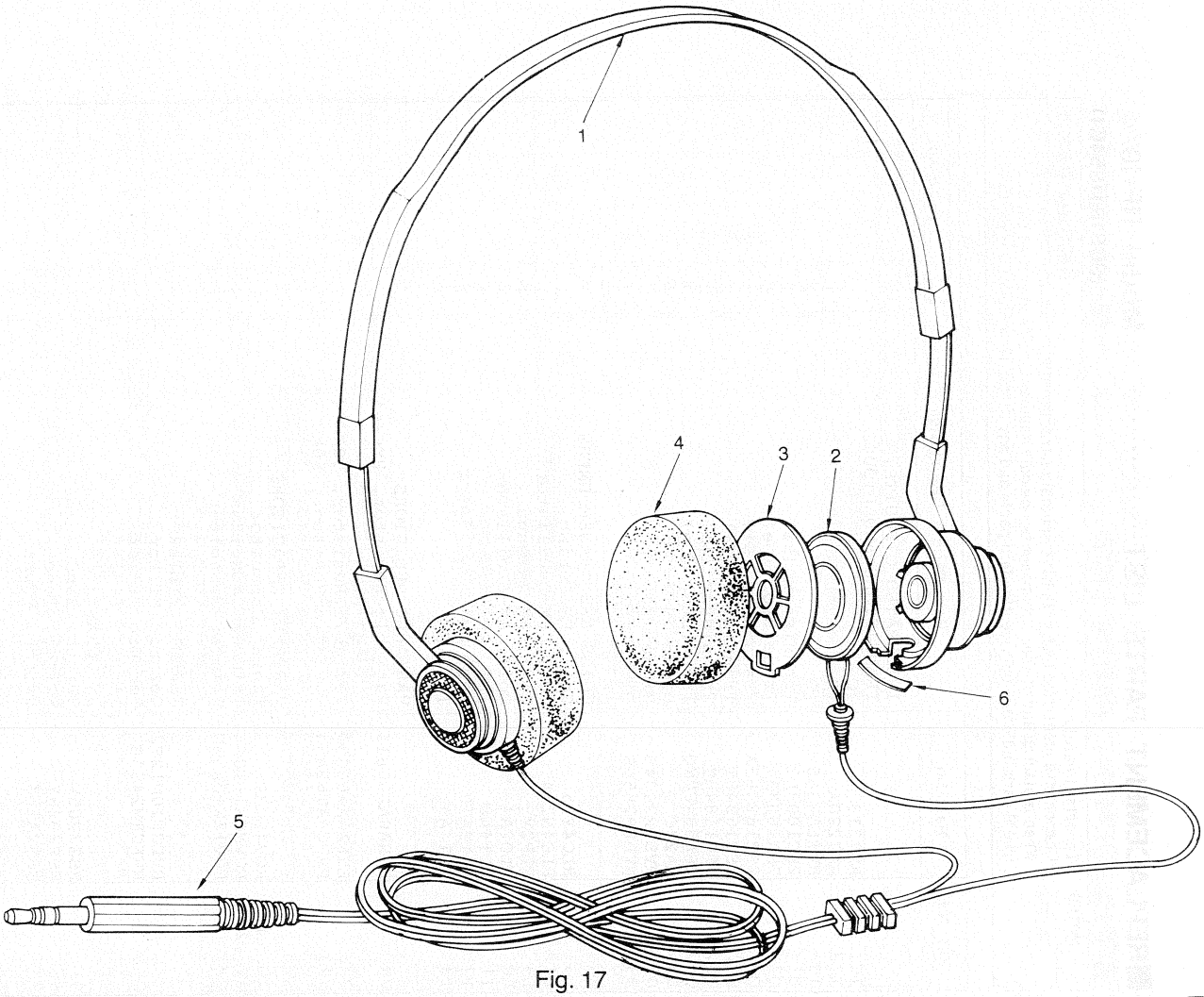


Fig. 17

■REPLACEMENT PARTS LIST·····Model RF-10/©

(RD81041854C1)

NOTES: 1. Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		INTEGRATED CIRCUITS, TRANSISTORS AND DIODES		
IC1	AN7213	IC	1	
IC2	AN7220A	IC	1	
IC3	RVILA3365	IC	1	
Q1	2SC1009F3	Transistor (Si)	1	S
Q2	2SK160K5	Transistor (Ge)	1	S
Q3	2SC1623L5A	Transistor (Si)	1	S
Q4,7	2SC1684HT	Transistor (Si)	2	
Q5,8	2SC1684HQ	Transistor (Si)	2	
Q6,9	2SA564C0MQ	Transistor (Ge)	2	
D1	MA27C	Diode (Si)	1	S
D2	RVDPR2434D	Diode (Si)	1	
D3,4	RVDKB265VS	Diode (Si)	2	
		COILS AND TRANSFORMERS		
L3	RLO4Y15	Coil, FM Tuning	1	
L4	RLO4N114	Coil, FM Oscillator	1	
L5	RLF2Y8	Coil, AM Antenna	1	
L6	RLO2A4	Coil, AM Oscillator	1	
T1	RLI4A8	IFT, FM	1	
T2	RLI2A10	IFT, AM	1	
T3	RLI4A9	IFT, FM	1	
		VARIABLE RESISTORS		
VR1	EVNA6AA00B14	Variable Resistor, Preset, 10kΩ (B)	1	S
VR2	EVLAGAA00G54	Variable Resistor, 50kΩ (G)	1	
VR3	EVUCAAT65A54	Variable Resistor, 50kΩ (A)	1	
		VARIABLE CAPACITORS		
VC1~4	RCV4LC31	Tuning Capacitor	1	
CT1,2,4	RCVMCX1-10S	Trimmer Capacitor	3	
CT3	ECV1ZW10X53N	Trimmer Capacitor	1	
		CERAMIC FILTERS		
CF1	RVFCF10M12F2	Ceramic Filter	1	
CF2	RVFCFM2455B	Ceramic Filter	1	
		SWITCHES		
S1	RSS3B05Y	Switch, Band	1	
S2	RSS2B26Y	Switch, Tone	1	
S3	RSS2A16Z	Switch, Power	1	
		JACK		
	RJJ1D6Z	Jack, Headphone	1	

PACKING MATERIALS

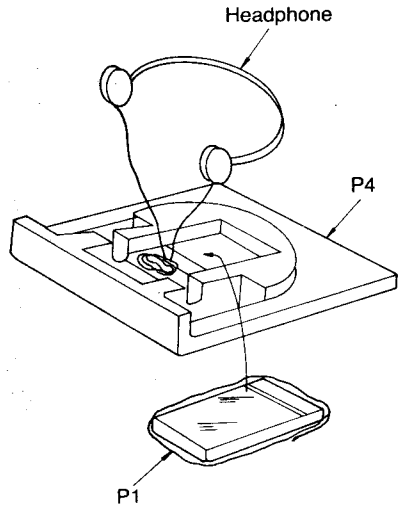


Fig. 18

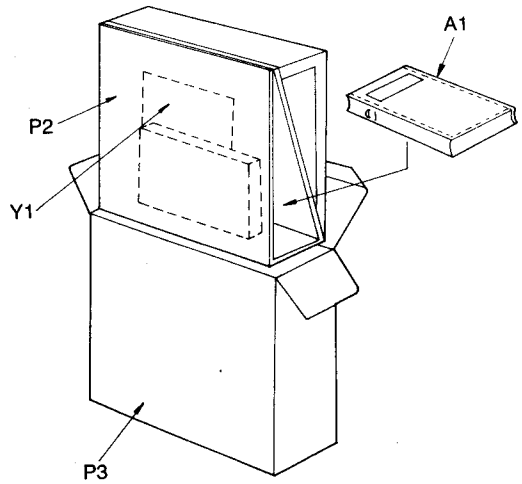


Fig. 19

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		RESISTORS (Value is in OHMS)		
R2	RRD18XK681	680 1/8W Chip	1	
R3	RRD18XK104	100 k " "	1	
R4	RRD18XK151	150 " "	1	
R5	RRD18XK334	330 k " "	1	
R6	RRD18XK102	1 k " "	1	
R7	RRD18XK470	47 " "	1	
R8	ERD10EJ681	680 " Carbon	1	
R9	RRD18XK221	220 " Chip	1	
R10	ERD10EJ470	47 " Carbon	1	
R11	RRD18XK332	3.3 k " Chip	1	
R12	RRD18XK152	1.5 k " "	1	
R13	RRD18XK221	220 " "	1	
R14	RRD18XK101	100 " "	1	
R15	RRD18XK473	47 k " "	1	
R16	RRD18XK472	4.7 k " "	1	
R17	RRD18XK474	470 k " "	1	
R18	RRD18XK394	390 k " "	1	
R19	ERD25FJ821	820 1/4W Carbon	1	S
R20	RRD18XK222	2.2 k 1/8W Chip	1	
R21	RRD18XK151	150 " "	1	
R22	RRD18XK681	680 " "	1	
R23	ERD25FJ472	4.7 k 1/4W Carbon	1	S
R24	RRD18XK472	4.7 k 1/8W Chip	1	
R25	ERD25FJ561	560 1/4W Carbon	1	S
R26,27	RRD18XK102	1 k 1/8W Chip	2	
R28	ERD25FJ682	6.8 k 1/4W Carbon	1	S
R29,30	RRD18XK102	1 k 1/8W Chip	2	
R31	RRD18XK224	220 k " "	1	
R32	ERD25FJ220	22 1/4W Carbon	1	S
R33,34	RRD18XK181	180 1/8W Chip	2	
R35	RRD18XK4R7	4.7 " "	1	
R36	RRD18XK224	220 k " "	1	
R37	RRD18XK220	22 " "	1	
R38,39	RRD18XK181	180 " "	2	
R40	RRD18XK4R7	4.7 " "	1	
R41	ERD25TJ104	100 k 1/4W Carbon	1	S
R42	RRD18XK563	56 k 1/8W Chip	1	
R60	ERD10EJ104	100 k 1/8W Carbon	1	
		CAPACITORS (Value is in MICRO FARADS except P.P=PICO FARADS)		
C1	ECUX1H101K	100 P Chip	1	
C2	ECUX1H560KC	56 P	1	
C3	ECUX1H070DC	7 P "	1	
C4	ECUX1H180KC	18 P "	1	
C5	ECUX1H222MD	0.0022 "	1	
C6	ECCD1H100KC	10 P 50V Ceramic	1	
C7	ECFVD223MD	0.022 25V Semi-Conductor	1	
C8	ECUX1H120KC	12 P Chip	1	
C9	ECUX1H220KC	22 P "	1	
C10	ECEA1HSR22	0.22 50V Electrolytic	1	
C11	ECUX1H103MD	0.01 Chip	1	
C12	ECUX1H103ZF	0.01 "	1	
C13	ECUX1H102MD	0.001 "	1	
C14	ECUX1H333ZF	0.033 "	1	
C15	ECUX1H103ZF	0.01 50V Chip	1	
C16	ECUX1H223MD	0.022 " "	1	
C17	ECUX1H103ZF	0.01 " "	1	
C18	ECEA1AS470	47 10V Electrolytic	1	S
C19,20	ECUX1H333ZF	0.033 50V Chip	2	
C21	ECUX1H103MD	0.01 " "	1	
C22	ECEA25Z4R7	4.7 25V Electrolytic	1	S
C23	ECEA1HSR1	0.1 50V "	1	
C24	ECUX1H333ZF	0.033 " Chip	1	
C25	ECUX1H223MD	0.022 " "	1	
C26	ECEA1AS101	100 10V Electrolytic	1	S
C27	ECUX1H681K	680 50V Chip	1	
C28	ECEA50Z1	1 50V Electrolytic	1	S
C29	ECEA50Z2R2	2.2 " "	1	S
C30	ECEA1AS101	100 10V "	1	S
C31	ECUX1H333ZF	0.033 50V Chip	1	
C32,33	ECUX1H223MD	0.022 " "	2	
C34	ECEA50Z3R3	3.3 50V Electrolytic	1	S
C35,36	ECEA50ZR47	0.47 " "	2	S
C37	ECQP2A102JZ	0.001 100V Polyestor	1	
C38,39	ECEA50Z1	1 50V Electrolytic	2	S
C40	ECUX1H100KC	10 P " Chip	1	
C41	ECFVD473MD	0.047 25V Semi-Conductor	1	
C43	ECFVD473MD	0.047 " "	1	
C44	ECEA50Z1	1 50V Electrolytic	1	S
C45	ECUX1H103MD	0.01 " Chip	1	
C46	ECEA1AS101	100 10V Electrolytic	1	S
C47	ECEA1AS470	47 " "	1	S
C48	ECEA50Z1	1 50V "	1	S
C49	ECUX1H103MD	0.01 " Chip	1	
C50	ECEA1AS101	100 10V Electrolytic	1	S
C51	ECEA1AS470	47 " "	1	S
C53,54	ECUX1H682MD	0.0068 50V Chip	2	
C55	ECUX1H030CC	3 P " "	1	
C57	ECUX1H101KD	100 P " "	1	
		CABINET PARTS		
K1	RYMF10M8	Front Cabinet Ass'y	1	
K2	RKF559Z7	Rear Cabinet	1	
K3	RKK178Z7	Battery Cover	1	
K4	RJC901Z	Terminal, Battery	1	
K5	RJC908Z	Terminal, Battery	1	
K6	XTB2+10CFZ	Screw, Cabinet M'tg	1	
K7	RBD145Z	Knob, Band & Tone	2	
		ELECTRICAL PARTS		
E1	RZAF10M	Dial Chassis Ass'y	1	
E2	RJC909Z	Terminal, Battery + Side	1	
E3	RJC911Z	Spring, Battery - Side	1	
E4	RBD144Z	Knob, Power	1	
E5	RMC506Z	Shield Cover, IC	1	
E6	RDD241Z	Drum, Dial	1	
E7	RDS2052Z	Spring, Dial	1	
E8	RDZ03Y	Cord, Dial	1 ROLL	
E9	RDP834Z	Pointer, Dial	1	

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Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
E10	RBT133Z	Knob, Tuning	1	
E11	RBT141Z	Knob, Volume	1	
E12	XSHR17+2FZ	Screw, Drum & Vol Knob M'tg	2	
E13	XSN17+2FZ	Screw, Tuning Capacitor M'tg	2	
E14	XNG2EBW	Nut, Tuning Knob M'tg	1	S
		ACCESSORY		
A1	RQK84Z	Case	1	
		PACKING MATERIALS		
P1	XZB10X20A04	Polyethylene Cover	1	S
P2	RPN3436Z	Pad	1	
P3	RPK1152Z	Gift Box, For USA	1	
P3	RPK1172Z	Gift Box, For Canada	1	
P4	RPE405Z	Display Stand, For USA	1	
P4	RPE408Z	Display Stand, For Canada	1	
		PRINTED MATERIALS		
Y1	RQX6751Z	Instruction Book, For USA	1	
Y1	RQX6763Z	Instruction Book, For Canada	1	
		HEADPHONE		
	RD9217M	Headphone Ass'y	1	
1	EAHMHH028AC	Head Band Ass'y	1	
2	EAHEAS2P03A	Speaker	2	
3	EAHMP016A	Buffle	2	
4	EAHME020A	Ear Pad	2	
5	EAHMN034B	Input Cord	1	
6	EAHMZ231	Label	2	

RD Ⓕ M/C
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